

Autogenic Feedback Training System

The Jemison Group, Inc.



The Ames Autogenic Feedback Training System (AAFTS) was originally developed by NASA to facilitate astronaut adaptation to space. There are three components of the AAFTS:

Autogenic-Feedback Training Exercise (AFTE): A six-hour training program which is a highly efficient and effective method of enabling people to control voluntarily several of their own physiological responses to a variety of environmental stressors.

Autogenic Feedback System-2 (AFS-2): An ambulatory physiological monitoring and feedback system that includes a garment, transducers, signal conditioning amplifiers, a microcontroller, a wrist-worn feedback display, and a cassette tape recorder.

Autogenic Clinical/Lab System (ACLS): A PC-based physiological monitoring and training system which includes an i586 processor with a 16-bit analog-to-digital converter and a multiple video display adapter (4 monitors) that utilizes software applications in the Windows 95 operating system environment. The user-interactive software can directly measure and display physiological responses in real-time. Further, realtime calculations enable non-invasive measures of cardiovascular dynamics (e.g., cardiac output, blood pressure, vagal tone, and total peripheral resistance).

Benefits High success rate: Training is effective within four to six hours in 85% of subjects tested as a treatment for motion sickness and in high performance military aircraft for airsickness. Multi-purpose training method: AFTE can be used to reduce physiological arousal, improve psychomotor performance, crew coordination, and communication. Non-pharmacological treatment: Training in both the recognition and control of changes in physiological responses provides an alternative, non-pharmacological method of treating a variety of disorders without side effects often seen with medication. Multi-parameter PC-based system: This system is more sophisticated than commercially available equipment by allowing the utilization of more information, making calculations in real-time, and utilizing multiple digital, waveform and audio displays simultaneously as controlled by the operator. Highly regarded ambulatory monitoring-feedback system: The AFS-2 has been rated by members of NASA's Astronaut Office as the best instrument of its kind because of its high data quality, ease of operation, and minimal time for setup and operation. The system's small size allows for greater comfort and mobility.

Potential Commercial Uses

AFTE can be used in the treatment of hypertension, dysautonomia, autonomic neuropathy, and nausea associated with chemotherapy. The training is also useful for alleviating low blood pressure in patients with diabetes, spinal cord lesions, or generalized somatic paralysis. Training can be used to modify central nervous system activity in the treatment of neuropathological disorders such as epilepsy, Attention Deficit Disorder, and mild head trauma. Military, commercial, and private pilots can use AFTE to reduce the risk of human error accidents by helping to control the physiological arousal associated with emergency flying conditions, which can negatively impact crew performance and safety. Ambulatory monitoring allows users to determine impact of motion sickness, fatigue, and sleep deprivation in military and civilian operators of land, air, and sea vehicles, and evaluate corrective countermeasures. AFTE can be used to alter brain activity resulting in the ability to modify effects of sleep deprivation on cognitive performance, and to facilitate sleep, thereby reducing disturbances in circadian rhythmicity. Similarly,

individuals subject to fatigue, jet-lag, insomnia, high stress work environments, and motion sickness can use AFTE to alleviate their symptoms. Technical Basics

The system consists of a unique multi-parameter physiological training method which employs both a PC-based laboratory training system and an ambulatory monitoring system for initial diagnosis/evaluation and post-training follow-up.

The Autogenic-Feedback Training described above was developed by Dr. Patricia S. Cowings, NASA Ames Research Center. Currently, the AFTE is exclusively licensed (U.S. 5694939) to the Jemison Group.

Contact

If you are interested in the technology, please contact:

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